UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,285	03/01/2004	Kashif A. Siddiqui	200312061-1	9514

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EXAMINER
GOFMAN, ALEX N

ART UNIT	PAPER NUMBER
2169	

DATE MAILED: 10/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/790,285	SIDDIQUI ET AL.
	Examiner	Art Unit
	Alex Gofman	2169

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>01 March 2004</u>.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-26</u> is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) <u>1-26</u> is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on <u>01 March 2006</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All   b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>3-1-04</u>.
4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This is the initial Office action based on the application filed on March 1, 2004.
Claims 1-26 are currently pending and have been considered below.

Claim Objections

1.   Claim 26 objected to because the second part of the claim, which says, "A
compiler histogram interface stored on the machine readable that obtains histogram..."
It should say, "... stored on the machine-readable media..."

Claim Rejections - 35 USC § 101

2.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
> matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
> conditions and requirements of this title.

Claims 1, 22, 26 are rejected under 35 U.S.C. 101 because the claimed invention
is directed to non-statutory subject matter. The claims lack the necessary physical
articles or objects to constitute a machine or a manufacture within the meaning of 35
USC 101. They are clearly not a series of steps or acts to be a process nor are they a
combination of chemical compounds to be a composition of matter. As such, they fail to
fall within a statutory category. They are, at best, functional descriptive material *per se*.

Claim Rejections - 35 USC § 112

3.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

4.   Claim 26 is rejected under 35 U.S.C. 112, second paragraph, as being
indefinite for failing to particularly point out and distinctly claim the subject matter
which applicant regards as the invention. The claim recites a computer program

comprising a machine-readable media. It is unclear how a program can comprise a media.

Claim Rejections - 35 USC § 102

> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5.   Claims 1-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Aboulnaga et al (6,460,045).

Claims 1 and 11: Aboulnaga discloses a system that provides compressed histogram data, comprising:

a. A compiler histogram interface that obtains histogram data about a table in a database (Col 1 ln 31-53). [Histogram data is obtained from tables that it is gathering statistical data from.]

b. A dynamic histogram compressor that receives output from the compiler histogram interface, input regarding a database query and table information to produce compressed histogram data for use by an optimizer (Col 1 ln 31-53). [Merging data into buckets produces the compressed histogram data. Buckets are set of partitions or boundaries, which divide the range of data on the attribute into a set of segments. However, a bucket itself may be understood as compressed data since buckets contain sampled and specific types of statistical information. And since the data is sampled and not all of the data is contained in the buckets, it is compressed]

Claims 2 and 12: Aboulnaga discloses the system of Claims 1 and 11 above and further discloses wherein the optimizer prepares a search plan based on the compressed histogram data (Col 5 ln 37-58).

Claims 3 and 13: Aboulnaga discloses the system of Claims 1 and 11 above and further discloses wherein the compressed histogram data is determined by combining intervals of the histogram data (Col 2 ln 45-53). [A

bucket is a collection of data on which statistics are ran. Intervals are formed as buckets of data are formed. Statistics, in Aboulnaga's embodiment are histograms. Once the data in the buckets is merged or combined, the data is compressed. Statistics at that time are taken on the compressed data, and it therefore becomes a compressed histogram.]

Claims 4 and 14: Aboulnaga discloses the system of Claims 3 and 13 above and further discloses wherein intervals are combined based at least in part on a column type (Col 1 ln 31-53).

Claims 5 and 15: Aboulnaga discloses the system of Claims 3 and 13 above and further discloses wherein intervals are combined based at least in part on whether a range predicate is defined on a column of the table (Col 2 ln 45-53, Col 5 ln 22-36). [Statistics are computed based on the query and its query plan. A range predicate is a specific query that limits the range of the query.]

Claims 6 and 16: Aboulnaga discloses the system of Claims 3 and 13 above and further discloses wherein intervals are combined based at least in part on whether a join predicate is defined on a column of the table (Col 5 ln 22-36).

Claims 7 and 17: Aboulnaga discloses the system of Claims 1 and 11 above and further discloses a column predicate and type analyzer that produces a compression strategy; and a compression application manager that receives the compression strategy and produces the compressed histogram data. Aboulnaga discloses using statistics 225 from the database in conjunction with an estimator 226, and a histogram tuner 250 (Fig 2, Col 5 ln 37-58). Those components produce the compression strategy and subsequently the compressed histogram data (Col 5 ln 60-67).

Claims 8 and 18: Aboulnaga discloses the system of Claims 1 and 11 above and further discloses wherein the table data comprises column type data about the table (Col 1 ln 11-30).

Claims 9 and 19: Aboulnaga discloses the system of Claims 1 and 11 above and further discloses wherein the table data comprises data regarding whether a predicate has been defined on a column of the table (Col 1 ln 11-30). [A predicate is the WHERE part of an SQL statement, and therefore that represents a row or a number of rows.]

Claims 10 and 20: Aboulnaga discloses the system of Claims 1 and 11 above and further discloses wherein the table data comprises metadata (Col 1 ln 11-30).

Claim 21: Aboulnaga discloses the system of Claim 11 above and further discloses wherein the database is a distributed database (Col 1 ln 11-30).

Claim 22: Aboulnaga discloses a method of creating a search plan for a database, the method comprising the acts of:

a. Obtaining histogram data about a table in a database, input regarding a database query and table information (Col 1 ln 31-53). [Histogram data is obtained from tables that it is gathering statistical data from.]

b. Producing compressed histogram data based on the histogram data, the input regarding the database query and the table information (Col 1 ln 31-53). [Merging data into buckets produces the compressed histogram data. Buckets are set of partitions or boundaries, which divide the range of data on the attribute into a set of segments. However, a bucket itself may be understood as compressed data since buckets contain sampled and specific types of statistical information. And since the data is sampled and not all of the data is contained in the buckets, it is compressed]

c. Using the compressed histogram data to produce a search plan to search the database in response to the query (Col 5 ln 37-58).

Claim 23: Aboulnaga discloses the system of Claim 22 above and further discloses combining intervals of the histogram data to form the compressed

histogram data (Col 2 ln 45-53). [A bucket is a collection of data on which statistics are ran. Intervals are formed as buckets of data are formed. Statistics, in Aboulnaga's embodiment are histograms. Once the data in the buckets is merged or combined, the data is compressed. Statistics at that time are taken on the compressed data, and it therefore becomes a compressed histogram.]

Claim 24: Aboulnaga discloses the system of Claim 22 above and further discloses producing a compression strategy based on the table information, and using the compression strategy to produce the compressed histogram data Aboulnaga discloses using statistics 225 from the database in conjunction with an estimator 226, and a histogram tuner 250 (Fig 2, Col 5 ln 37-58). Those components produce the compression strategy and subsequently the compressed histogram data (Col 5 ln 60-67).

With respect to **Claim 25**, the examiner notes that means-plus-function language herein invokes interpretation under 35 USC 112, 6th paragraph.

Claim 25: Aboulnaga discloses a system that provides compressed histogram data, comprising:

a. Means for obtaining histogram data about a table in a database (Col 1 ln 31-53). [Histogram data is obtained from tables that it is gathering statistical data from.]

b. Means for receiving output from the compiler histogram interface, input regarding a database query and table information to produce compressed histogram data for use by an optimizer (Col 1 ln 31-53). [Merging data into buckets produces the compressed histogram data. Buckets are set of partitions or boundaries, which divide the range of data on the attribute into a set of segments. However, a bucket itself may be understood as compressed data

since buckets contain sampled and specific types of statistical information. And since the data is sampled and not all of the data is contained in the buckets, it is compressed]

Claim 26: Aboulnaga discloses computer program, comprising:

a. Machine-readable media (Col 2 ln 13-18).

b. A compiler histogram interface stored on the machine-readable that obtains histogram data about a table in a database (Col 1 ln 31-53). [Histogram data is obtained from tables that it is gathering statistical data from.]

c. A dynamic histogram compressor stored on the machine-readable media that receives output from the compiler histogram interface, input regarding a database query and table information to produce compressed histogram data for use by an optimizer (Col 1 ln 31-53). [Merging data into buckets produces the compressed histogram data. Buckets are set of partitions or boundaries, which divide the range of data on the attribute into a set of segments. However, a bucket itself may be understood as compressed data since buckets contain sampled and specific types of statistical information. And since the data is sampled and not all of the data is contained in the buckets, it is compressed]

Conclusion

6.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lee et al (6,311,181), Gibbons et al (5,870,752), Gibbons et al (6,012,064).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alex Gofman whose telephone number is (571)270-1072. The examiner can normally be reached on Mon-Fri 9am-3pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christian Chace can be reached on (571)272-4190. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A.G.

AG

9-19-06

Christian Chace

Supervisory Patent Examiner